PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Naik et al.

Serial No.: Not Yet Assigned

Filed: March 18, 2004

For: ENTRAPMENT OF BIOMOLECULES AND INORGANIC NANOPARTICLES BY BIOSILICIFICATION

Confirmation No.: Unknown

Examiner: Unknown

Group Art Unit: Unknown

Attorney Docket No.: 3148-6231.1US

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INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In compliance with the duty to disclose information material to patentability pursuant to 37 C.F.R. § 1.56, it is respectfully requested that this Information Disclosure Statement be entered and the documents listed on attached Form PTO-1449 be considered by the Examiner and made of record. Copies of the listed documents are enclosed pursuant to 37 C.F.R. § 1.98(a).

In accordance with 37 C.F.R. § 1.97(g) and (h), filing of this Information Disclosure Statement is not to be construed as a representation that a search has been made or an admission that the information cited herein is, or is considered to be, material to patentability as defined in

37 C.F.R. § 1.56(b). Further, no representation is made by Applicants herein that no other possible material information as defined in 37 C.F.R. § 1.56(b) exists.

U.S. Patent Documents

U.S. Patent No.	Publication Date	Patentee
3,821,083	06/28/1974	Van Leemputten et al.
5,874,109	02/23/1999	Ducheyne et al.
5,951,962	09/14/1999	Müller et al.
6,395,299 B1	05/28/2002	Babich et al.
6,495,352 B1	12/17/2002	Brinker et al.
US 2002/0015985 A1	02/07/2002	Takahashi et al.

Foreign Patent Documents

Document No.	Publication Date	Patentee
WO 00/35993 A1	06/22/2000	Morse et al.
WO 01/62906 A2	08/30/2001	Basheer
WO 02/068454 A2	09/06/2002	Ackerman et al.
EP 1 252 184 A1	10/23/2002	Kajino et al.
WO 03/066209 A1	08/14/2003	Marteaux et al.

Other Documents

Akbarian, F., et al., "Spectroscopic Determination of Cholinesterase Activity and Inhibition in Sol-Gel Media," Journal of Sol-Gel Science and Technology 8, pp. 1067-1070 (1997).
Alsen, C., et al., "Studies on Acetylcholinesterase and Cholinesterase Covalently Bound to Polymaleinic Anhydride," Biochimica et Biophysica Acta 377, pp. 297-302 (1975).
Altstein, M., et al., "Sol-Gel-Entrapped Cholinesterases: A Microtiter Plate Method for Monitoring Anti-cholinesterase Compounds," J. Agric. Food Chem. 46, pp. 3318-3324 (1998).
Avnir, D., et al., "Enzymes and Other Proteins Entrapped in Sol-Gel Materials," Chem. Mater. 6, pp. 1605-1614 (1994).
Bruins, M. E., et al., "Thermozymes and Their Applications," Applied Biochemistry and Biotechnology 90, pp. 155-186 (2001).

Drott, J., et al., "Porous Silicon as the Carrier Matrix in Microstructured Enzyme Reactors Yielding High Enzyme Activities," J. Micromech. Microeng. 7, pp. 14-23 (1997).
Gill, I., et al., "Bioencapsulation Within Synthetic Polymers (Part 1): Sol-Gel Encapsulated Biologicals," TIBTECH 18, pp. 282-296 (July 2000).
Gill, I., et al., "Bioencapsulation Within Synthetic Polymers (Part 2): Non-Sol-Gel Protein-Polymer Biocomposites," TIBTECH 18, pp. 469-479 (Nov. 2000).
Gill, I., et al., "Encapsulation of Biologicals within Silicate, Siloxane, and Hybrid Sol-Gel Polymers: An Efficient and Generic Approach," J. Am. Chem. Soc. 120, pp. 8587-8598 (1998).
Kim, Young Duk, et al., "Siloxane-Based Biocatalytic Films and Paints for Use as Reactive Coatings," Biotechnology and Bioengineering, Vol. 72, No. 4, pp. 475-482 (Feb. 20, 2001).
Kovacs, K., et al., "Preparation and Properties of a Novel Immobilized Cholinesterase," Journal of Applied Biochemistry 4, pp. 11-18 (1982).
Kramer, D.N., et al., "Colorimetric Determination of Acetylcholinesterase Activity," Analytical Chemistry , Vol. 30, No. 2, pp. 251-254 (Feb. 1958).
Kröger, N., et al., "Polycationic Peptides from Diatom Biosilica That Direct Silica Nanosphere Formation," Science, Vol. 286, pp. 1129-1132 (Nov. 5, 1999).
Kröger, N., et al., "Self-Assembly of Highly Phosphorylated Silaffins and Their Function in Biosilica Morphogenesis," Science, Vol. 298, pp. 584-586 (Oct. 18, 2002).
Lei, C., et al., "Entrapping Enzyme in a Functionalized Nanoporous Support," J. Am. Chem. Soc. 124, pp. 11242-11243 (2002).
Naik, R.R., et al., "Controlled Formation of Biosilica Structures *in Vitro*," The Royal Society of Chemistry/Chem. Commun., pp. 238-239 (2003).
Naik, R.R., et al., "Silica-Precipitating Peptides Isolated from a Combinatorial Phage Display Peptide Library," J. Nanosci. Nanotech., Vol. 2, No. 1, pp. 95-100 (2002).
Novick, S.J., et al., "Protein-Containing Hydrophobic Coatings and Films," Biomaterials 23, pp. 441-448 (2002).
Shtelzer, S., et al., "Properties of Trypsin and of Acid Phosphatase Immobilized in Sol-Gel Glass Matrices," Biotechnology and Applied Biochemistry 15, pp. 227-235 (1992).

Applicants offer to supply any explanation or discussion of the documents that the Examiner feels is necessary or desirable and which is requested.

This Information Disclosure Statement is filed within three (3) months of the filing date of the above-identified application, and no certification pursuant to 37 C.F.R. § 1.97(c) or a fee pursuant to 37 C.F.R. § 1.17(p) is required.

Respectfully submitted,

Katherine A. Hamer

Katherine A. Hamer
Registration No. 47,628
Attorney for Applicant(s)
TRASKBRITT
P.O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: 801-532-1922

Date: March 18, 2004
KAH/ps:ljb

Enclosures: Form PTO-1449
Cited Documents
Document in ProLaw

Form PTO-1449 INFORMATION DISCLOSURE CITATION IN AN APPLICATION *(Use several sheets if necessary)*	Docket Number (Optional) **3148-6231.1US**	Application Number **Not Yet Assigned**
	Applicant **Naik et al.**	
	Filing Date **3/18/04**	Group Art Unit **Unknown**

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	3,821,083	06/28/1974	Van Leemputten et al.			
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	WO 01/62906 A2	08/30/2001	Basheer				
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	WO 03/066209 A1	08/14/2003	Marteaux et al.				

OTHER DOCUMENTS

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		Alsen, C., et al., "Studies on Acetylcholinesterase and Cholinesterase Covalently Bound to Polymaleinic Anhydride," Biochimica et Biophysica Acta 377, pp. 297-302 (1975).
		Altstein, M., et al., "Sol-Gel-Entrapped Cholinesterases: A Microtiter Plate Method for Monitoring Anti-cholinesterase Compounds," J. Agric. Food Chem. 46, pp. 3318-3324 (1998).

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